Amendments to the Claims:

These claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A transmission system for transmitting a multilevel signal from a transmitter to a receiver, the transmitter comprising a mapper for mapping an input signal according to a ~~variable~~ signal constellation onto the multilevel signal, the receiver comprising a demapper for demapping the received multilevel signal according to the ~~variable~~ signal constellation, wherein the ~~variable~~ signal constellation comprises 2^m signal points with corresponding labels of m bits in length, and satisfies the following criteria:

$D_a > D_f$, with D_a being the minimum of the Euclidean distances between all pairs of signal points whose corresponding labels differ in a single position, and with D_f being the minimum of the Euclidean distances between all pairs of signal points, and

the average Hamming distance (H_1) between all pairs of labels corresponding to neighboring signal points has a minimum value.

2. (Previously Presented) The transmission system according to claim 1, wherein D_a has a maximum value.

3. (Cancelled)

4. (Previously Presented) The transmission system according to claim 1, wherein the signal constellation is a 16-Quadrature Amplitude Modulation signal constellation.

5. (Previously Presented) The transmission system according to claim 1, wherein the signal constellation is a 64-Quadrature Amplitude Modulation signal constellation.

6. (Previously Presented) The transmission system according to claim 1, wherein the signal constellation is a 256-Quadrature Amplitude Modulation signal constellation.

7. (Previously Presented) The transmission system according to claim 1, wherein the signal constellation is a 8-Phase Shift Keying signal constellation.

8. (Currently Amended) A transmitter for transmitting a multilevel signal, the transmitter comprising a mapper for mapping an input signal according to a ~~variable~~ signal constellation onto the multilevel signal, wherein the ~~variable~~ signal constellation comprises 2^m signal points with corresponding labels of m bits in length, and satisfies the following criteria:

$D_a > D_f$, with D_a being the minimum of the Euclidean distances between all pairs of signal points whose corresponding labels differ in a single position, and with D_f being the minimum of the Euclidean distances between all pairs of signal points, and

the average Hamming distance (H_1) between all pairs of labels corresponding to neighboring signal points has a minimum value.

9. (Previously Presented) The transmitter according to claim 8, wherein D_a has a maximum value.

10. (Cancelled)

11. (Currently Amended) A receiver for receiving a multilevel signal, the receiver comprising a demapper for demapping the multilevel signal according to a ~~variable~~ signal constellation, wherein the ~~variable~~ signal constellation comprises 2^m signal points with corresponding labels of m bits in length, and satisfies the following criteria:

$D_a > D_f$, with D_a being the minimum of the Euclidean distances between all pairs of signal points whose corresponding labels differ in a single position, and with D_f being the minimum of the Euclidean distances between all pairs of signal points, and

the average Hamming distance (H_1) between all pairs of labels corresponding to neighboring signal points has a minimum value.

12. (Previously Presented) The receiver according to claim 11, wherein D_a has a maximum value.

13. (Cancelled).

14. (Cancelled)

15. (Cancelled)

16. (Cancelled).

17. (Cancelled)

18. (Cancelled)

19. (Cancelled).

20. (Currently Amended) A method of transmitting a multilevel signal from a transmitter to a receiver, the method comprising the steps of: mapping an input signal according to a ~~variable~~ signal constellation onto the multilevel signal, transmitting the multilevel signal, receiving the multilevel signal and demapping the multilevel signal according to the ~~variable~~ signal constellation, wherein the ~~variable~~ signal constellation comprises 2^m signal points with corresponding labels of m bits in length, and satisfies the following criteria:

$D_a > D_f$, with D_a being the minimum of the Euclidean distances between all pairs of signal points whose corresponding labels differ in a single position, and with D_f being the minimum of the Euclidean distances between all pairs of signal points, and

the average Hamming distance (H_1) between all pairs of labels corresponding to neighboring signal points has a minimum value.

21. (Previously Presented) The method according to claim 20, wherein D_a has a maximum value.

22. (Cancelled)

23. (Currently Amended) A multilevel signal embodied in a computer readable medium, the

multilevel signal being the result of a mapping of an input signal according to a ~~variable~~ signal constellation, wherein the ~~variable~~ signal constellation comprises 2^m signal points with corresponding labels of m bits in length, and satisfies the following criteria:

$D_a > D_f$, with D_a being the minimum of the Euclidean distances between all pairs of signal points whose corresponding labels differ in a single position, and with D_f being the minimum of the Euclidean distances between all pairs of signal points, and

the average Hamming distance (H_1) between all pairs of labels corresponding to neighboring signal points has a minimum value.

24. (Previously Presented) The multilevel signal according to claim 23, wherein D_a has a maximum value.

25. (Cancelled).

26. (Previously Presented) The multilevel signal according to claim 23, wherein the signal constellation is a 16-Quadrature Amplitude Modulation signal constellation.

27. (Previously Presented) The multilevel signal according to claim 23, wherein the signal constellation is a 64-Quadrature Amplitude Modulation signal constellation.

28. (Previously Presented) The multilevel signal according to claim 23, wherein the signal constellation is a 256-Quadrature Amplitude Modulation signal constellation.

29. (Previously Presented) The multilevel signal according to claim 23, wherein the signal constellation is a 8-Phase Shift Keying signal constellation.